



Good School Governance Through Technological Transformation: Implementation of Digital Attendance at SMK PGRI Mojoagung to Meet Global Demands

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ABSTRACT

This community engagement activity aimed to implement a digital attendance system using spreadsheets and QR Codes at SMK PGRI Mojoagung, which previously used manual attendance. The main problems faced by the school were the low efficiency of attendance data recapitulation and limited administrative transparency, which affected the quality of school governance. The implementation method consisted of an initial survey, interviews with school partners, digital system design, QR Code preparation for student cards, user training, and implementation evaluation involving 180 tenth-grade students. The results showed improved efficiency in attendance recording, greater data accuracy, easier real-time monitoring, and stronger communication between the school and parents through WhatsApp notifications. The activity also supported the application of good school governance principles through more standardized procedures, faster data updates, and traceable attendance records that can be used as evidence for school accreditation. However, implementation still requires attention to infrastructure readiness, user digital literacy, data integrity, and student personal data protection.

Kegiatan pengabdian masyarakat ini bertujuan mengimplementasikan sistem presensi digital berbasis spreadsheet dan QR Code di SMK PGRI Mojoagung yang sebelumnya masih menggunakan presensi manual. Permasalahan utama yang dihadapi sekolah adalah rendahnya efisiensi rekapitulasi data kehadiran serta keterbatasan transparansi administrasi yang berdampak pada kualitas tata kelola sekolah. Metode pelaksanaan meliputi survei awal, wawancara dengan mitra sekolah, perancangan sistem digital, pembuatan QR Code kartu pelajar, pelatihan penggunaan, serta evaluasi implementasi pada 180 siswa kelas X. Hasil kegiatan menunjukkan peningkatan efisiensi pencatatan presensi, akurasi data, kemudahan monitoring secara real time, serta penguatan komunikasi sekolah dengan orang tua melalui notifikasi WhatsApp. Kegiatan ini juga mendukung penerapan prinsip good school governance melalui prosedur yang lebih baku, pembaruan data lebih cepat, dan jejak presensi yang



dapat ditelusuri sebagai bukti akreditasi sekolah. Namun, implementasi tetap memerlukan perhatian terhadap kesiapan infrastruktur, literasi digital pengguna, integritas data, dan perlindungan data pribadi siswa.

A. INTRODUCTION

Digital transformation in schools is increasingly shifting from the mere use of learning applications toward strengthening data-driven governance systems. At the operational level, one of the most routine, high-volume, and frequently reused types of data is attendance data. Digital transformation is understood as a process to improve an entity through significant changes driven by a combination of information technology, computing, communication, and connectivity (Wijayantini et al., 2024). When attendance systems are still manual, schools tend to face classic problems such as scattered data, inconsistent tallies across classes, and evidence that is difficult to trace when needed for program evaluations or administrative audits. Digital attendance systems represent an innovation in attendance tracking that utilizes information technology to automatically record attendance data and verify user identities through electronic mechanisms (Ikbal Adi Putra et al., 2024)

In the context of school accreditation, the need for evidence of performance further underscores the importance of data that is easily traceable and consistent. The latest accreditation instruments established cover various assessment components, such as educator performance, school principal leadership, the learning environment, and students' achievement of learning competencies (Simarmata et al., 2022). These conditions mean that attendance data is no longer viewed merely as a record of daily attendance, but rather as part of the evidence of processes that play a strategic role in supporting the evaluation of school management and the creation of a conducive learning environment (Zahirah et al., 2026)

In line with this, Sahira et al. (2025) emphasize that the implementation of digital-based educational management information systems, including attendance tracking, contributes to improved service accountability and the effectiveness of school governance. Consistent with these findings, the digitization of administrative processes has proven effective in reducing teachers' administrative workload through workflow automation (Maryani & Kuswantoro, 2025). Attendance data can be monitored, compiled, and reported more quickly and in an integrated manner, thereby strengthening data-driven decision-making. In the digital era of learning, digital attendance should not be viewed merely as a means of fulfilling administrative attendance requirements but also as a reflection of educators' involvement in managing a technology-based learning ecosystem. Eka & Kaniati (2024) demonstrate that the implementation of smart schools utilizes digital tools such as e-class, e-module, e-test, and digital attendance to enhance the quality of learning.

Despite the proven benefits of digital attendance systems highlighted in previous studies, a significant gap remains in their practical implementation, particularly in schools with limited financial and technical resources. Many existing digital transformation models require expensive infrastructure, specialized software subscriptions, or advanced technical expertise, making them inaccessible for certain institutions. While complex educational management information systems are effective for well-funded schools, there is limited literature addressing low-cost, easily adaptable digital alternatives that can bridge the digital divide. Furthermore, existing studies rarely explore how university-led community empowerment



programs can act as practical catalysts to initiate this technological transition at the grassroots level.

Attendance is a crucial tool for monitoring discipline and supporting managerial decision-making in schools. Inefficiencies in the attendance system can lead to inadequate learning assessments and poor-quality academic reporting. Therefore, digitizing attendance is a practical and relevant solution in the context of modern educational management. This activity was conducted at SMK PGRI Mojoagung, a vocational high school located in Mojoagung Subdistrict, Jombang Regency. Preliminary survey results indicate that the school still uses a manual attendance system and faces difficulties in monthly data compilation due to the absence of accessible digital infrastructure. Given the nature of vocational education, which emphasizes practical activities and punctuality, the attendance system plays a crucial role in supporting administrative order and improving the quality of school governance..

Through the Student Work-Study Program, the community service team developed a digital attendance system based on spreadsheets and QR codes as a form of community service to support more effective, transparent, and accountable school management without incurring high infrastructure costs. The use of technology in implementing a QR code-based digital attendance system can be understood as the application of technological procedures that add value to the attendance process—specifically, by transforming manual attendance recording into digital recording based on QR code scanning, which can be carried out via mobile devices and connected to the student database (Agung et al., 2023).

B. METHODS

This community service activity employed a case study design with a qualitative descriptive approach. The focus of the activity was on understanding the implementation process of the digital attendance system and its contribution to achieving good school governance and providing authentic evidence for accreditation purposes (Asy et al., 2021). The implementation approach adopted the principles of participatory community service, involving partners consisting of the school principal, guidance counselors, administrative staff, and 180 tenth-grade students.

The activity was designed to proceed through five stages. First, problem identification through observation and interviews with school management. Second, the design of a spreadsheet-based database system capable of automatically recording attendance. Third, the creation of an input instrument in the form of a QR code on student ID cards. Fourth, technical training for operators and teachers on duty. Fifth, evaluation of the implementation by comparing the initial recording process with the operational system. Data analysis was conducted iteratively through data reduction, presentation, and drawing of conclusions validated by source triangulation.

The management of attendance data has ethical implications because it directly involves students' personal information. Data processing is guided by compliance with the principles of personal data protection in accordance with Law of the Republic of Indonesia No. 27 of 2022, which requires system controllers to maintain confidentiality and restrict data access to unauthorized parties (Razaqa et al., 2024).

C. RESULTS AND DISCUSSION

1.1 Results of the Digital Attendance System Implementation

The implementation of digital attendance tracking has led to improved efficiency in school administration. The system automatically records attendance in the monthly log using standardized attendance codes: H (Present), T (Late), S (Sick), I



(Excused), and A (Absent). Standardizing these codes makes it easier for schools to compile reports and minimizes discrepancies in recording formats across classes.

Attendance data can also be monitored in real time and used as a basis for evaluating student discipline. The WhatsApp notification feature for parents strengthens communication between the school and families, although in the initial stages it is still semi-manual. In general, digital attendance supports school governance through more standardized procedures, faster data updates, and an audit trail that is useful for accreditation purposes. A comparison of conditions before and after digitization is presented in:

Table 1. Comparison of Attendance System Before and After Digitalization

Aspect	Before Digitalization	After Digitalization
Recording method	Manual attendance book	QR Code scan and spreadsheet
Monthly recapitulation	Manual and time-consuming	Automatic
Risk of error	High	Low
Attendance monitoring	Difficult	Easier and real time
Data transparency	Limited	Clearer according to user authority
Parent communication	Not available	Via WhatsApp notification

Overview of the Implementation of Digital Attendance

1.2 Overview of the Implementation of Digital Attendance

The implementation of digital attendance at SMK PGRI Mojoagung can be understood as a transition from a manual, paper-based attendance system with manual data compilation to a system based on an app, mobile devices, and QR code scanning. Operationally, digital attendance includes validated student identities, a mechanism for recording attendance via QR code scanning, validation by teachers or staff, data storage in a centralized database, automatic daily and monthly summaries, and a feature for tracking attendance history (Saputro & Kurniadi, 2021).

In a QR code-based attendance system integrated with a web application or spreadsheet, specific class schedules or sessions can be linked to specific QR codes. Students scan the code at a predetermined time, allowing the attendance recording process to proceed more quickly, reducing lines, and minimizing disruptions to class time. Nuraeni et al., (2022) explain that QR code scanning is designed to speed up the attendance process so that attendance can be recorded in a matter of seconds before or at the start of class.

1.3 The Contribution of Digital Presence to the Principles of Good School Governance

Digital attendance systems strengthen the implementation of good school governance not merely through the use of technology, but by encouraging schools to organize processes, roles, and lines of accountability in a more systematic and well-documented manner (Sahira et al., 2025). In terms of transparency, attendance summaries generated automatically and periodically make attendance data more accessible to homeroom teachers, the student affairs office, and authorized parties.



Transparency in this context does not mean making all data available to everyone, but rather ensuring that attendance information is available to authorized parties in a clear, consistent, and easy-to-understand format.

In terms of accountability, digital attendance provides an audit trail of who entered the data, when changes were made, and what corrections occurred. Activity logging features help schools address evaluative questions, such as why data changed, who approved the changes, and what the basis for the corrections was. Consequently, service quality reports become more factual because they are based on data recorded automatically and consistently.

In terms of effectiveness and efficiency, the digitization of attendance reduces repetitive data-compilation tasks, speeds up the reporting process, and lowers the risk of recording errors that are common in manual systems. The automation of recording and data compilation allows educators and school staff to focus more on instructional services rather than routine administrative tasks. This aligns with the direction of educational management standards, which require the delivery of education in an effective and efficient manner through well-organized planning, implementation, and oversight (Robbi et al., 2026).

From the perspective of regulatory compliance and risk management, digital attendance systems must be equipped with standard operating procedures regarding access management, processing purposes, data storage, and data security. Since the system processes students' personal data, schools need to establish user access rights, data retention policies, data correction procedures, and mitigation measures against leaks and misuse of student attendance information..

1.4. Digital presence as evidence of performance for accreditation

The latest accreditation instrument evaluates educational institutions based on components that include the leadership of the school principal in managing the institution and the learning environment as key elements of the assessment. These two components are given equal weight alongside educator performance and student learning outcomes as performance indicators that must be substantiated through well-organized data and documentation (Simarmata et al., 2022).

In this context, digital attendance tracking can demonstrate that a school maintains a system for monitoring discipline and the regularity of the learning process that operates consistently over time. Through automated and centralized recording, the school also demonstrates consistent management of operational data in terms of format, reporting periods, and attendance verification procedures. Furthermore, digital attendance data enables schools to provide a detailed service record, such as attendance summaries, follow-ups on absences, and student attendance patterns, which can serve as the basis for guidance and disciplinary interventions.

1.5. Implementation Challenges and Mitigation Strategies

Some of the challenges that arise in implementing digital attendance systems in high schools include issues related to infrastructure, user digital literacy, data integrity, and data protection. On the infrastructure side, schools may face challenges such as unstable networks during peak hours, a shortage of scanning devices, or unreliable servers that cause the system to run slowly. On the user side, some teachers and students who are not yet accustomed to digital systems require guidance to



prevent errors or improper practices, such as having someone else scan their QR code for them.

Another challenge relates to data integrity, so schools need clear rules regarding correction and verification procedures to ensure attendance data cannot be easily manipulated. Realistic mitigation strategies include developing authorization-based data correction SOPs, conducting brief training sessions for teachers and operators, performing periodic attendance data audits, and establishing clear data retention policies. Data protection aspects must be emphasized from the outset, as the obligation to maintain the security and confidentiality of personal data is a legal mandate under the Personal Data Protection Act (Mulawarman et al., 2026).

D. CONCLUSION

Digital attendance is a form of digital transformation closely tied to a school's daily routines, so its impact on governance is quickly evident in day-to-day practices, from attendance recording to reporting. In a case study at SMK PGRI Mojoagung, digital attendance has the potential to strengthen good school governance through the standardization of attendance processes, increased transparency and accountability, greater administrative efficiency, and the availability of attendance records that are easier to verify for accreditation purposes.

Support for accreditation has become a key focus because the latest assessment instruments prioritize educational institution leadership and the learning environment as primary evaluation components, requiring consistent operational evidence that is data-traceable. On the other hand, implementation challenges include infrastructure conditions, data integrity, user digital literacy, and personal data protection. Therefore, schools need to strengthen their standard operating procedures (SOPs), access security, periodic data audits, and data governance in accordance with applicable personal data protection regulations.

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F. AUTHOR CONTRIBUTIONS

Zakky Abdul Ghafur Zatznika (ZAGZ): activity planning, partner coordination, and article drafting. Mutia Mahmudah (MM): activity implementation and data collection. Winarsih Vilia Sari (WVS): field observations and documentation. Rulli Fatmawati (RF): training on system use and evaluation of implementation. Rita Nurmalia (RN): analysis of results and discussion. Fina Tri Handayani (FTH): compilation of references and editing of the article. Winda Nurlaily Rafikalia Iskandar (WNRI): finalization of the manuscript and formatting review.

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